

TCT_{Mobile}

Service Manual

U10C / OT-222(A)

1. Product presentation
2. L1 Maintenance guide



Note: This manual is non-contractual and TCT Mobile phones can modify without prior notice the characteristics of described equipments.

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	Function	Name	Date	Signature
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CHAPTER 1

PRODUCTS PRESENTATION

1.1 GENERAL

U10C cellphone is a clamshell product, MTK platform, uses MTK6223D chip, It supports FM, Hand-free, Game, Calculator and calendar. U10C works with the GSM Dual Band (900/1800 MHz for EU version) and (850/1900MHz for US version).

Detail features of OT-222

Item	Definiens	Item	Definiens
Height	90mm	Ringtones	- MIDI 64, WAV, AMR
Width	44.5mm	Voice mail access	Direct access through "1" key
Thickness	19.3mm	Double call management	Supported
Weight (1)	71g	On hold	Supported
Main LCD Size	resolution = 128*128	Multi party call	Supported
Backlight	White colour LEDs for Main display	Current Line Indicator	Supported
Backlight	- Blue colour LEDs	Beep duration reminder	Every 1 s minimum
Extended GSM band	Supported	Alarm clock	Supported
Call Barring (CB)	Supported	Currency converter	Supported
Call Hold (CH)	Supported	Diverted call indicator	Supported
Call Waiting (CW)	Supported	Local restriction	Limited to SIM ADN directory
Call Forward (CF)	Supported	SIM restriction	Limited to SIM FDN directory
Explicit Call transfer	Supported	Network restriction	Through Network Call barring
SMS status report	Supported	Calculator	Supported
Number extraction	Supported	Pre-defined SMS	Supported: 50 items
SMS inline segment counter	supported	Clock display	Supported Digital Format
Voice Mail Number management	Supported	Category & ring tone association	Supported
Network operator name display	Supported	Speed dialling	Through 2,3, 4, 5, 6, 7, 8,9 keys
Home country roaming indicator	Supported	Message storage	- UP to 100 messages in Phone
Voice Message Waiting Indicator	Supported	Last call	Accessible through menu option
SIM ME Lock	SIM ME Lock is supported		

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1.2 PORTABLE STICKERS

1.2.1 COMMERCIAL LABEL MARKING (IMEI STICKER)

Printing zone definition (CPE0000006C0 ----- For General, 33x16mm)

ZONE 14	ZONE 15	ZONE 16
ZONE 13		
	ZONE 17	
	ZONE 1	ZONE 2
	ZONE 18	ZONE 3
	ZONE 4	ZONE 5
	ZONE 6	ZONE 12
ZONE 11	ZONE 7	
	ZONE 8	
	ZONE 9	
	ZONE 10	

Baseline	Product name	Certification name	IMEI
U10C	OT-222	CE1588	TAC: 35591603
	OT-222A	FCC ID:RAD118	TAC : 01200300

For general countries:

Zone	Variable	Signification
1	-	Product name: XXXX
2	-	Distributor : For EMEA: TCT Mobile Limited For Latam: TCT MOBILE For CN: 苏州 TCL 天一移动通信有限公司 GSM 双频 GPRS 功能数字移动电话机
3	DATA3	PTS='soft' techn. Release xxx
4	DATA10 or DATA 12	Short code xxxxx
5	DATA2	PTM
6	-	Made In (by) ... according to made in file
7	-	China version—CMII:0000000000 / PCS version—FCC ID:RAD 118
8	DATA7	Commercial Ref
9	DATA5	Full IMEI
10	DATA5	Bar code IMEI
11	DATA5/DATA11/DATA2/ DATA3/DATA7	DATAMATRIX Code IMEI No. / INDUS. REF. / PTH(PTM) / PTS / COM. REF.
12	DATA4	Date Code xxx
13/14/15/16	-	Special Logo
17		Remarker
18	DATA18	"E"- Enhanced SIM Lock; "N"- Normal SIM Lock and No SIM Lock;
NO	DATA11	3DS (INDUS REF)

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Samples for Commercial Label:

China	 <p>OT-222 苏州TCL天一移动通信有限公司 GSM双频GPRS功能数字移动电话机 N 103 1WAB 02 3JS 中国制造 CMII ID:XXXXXXXXXX 222X-2AALCN1 35591603XXXXXXX</p> 
EUROPE	<p>CE 1588</p>  <p>OT-222 TCT Mobile Limited N 103 1WAB 02 3JS Made In China 222X-2AALEU1 35591603XXXXXXX</p> 
MEXICO	  <p>OT-222A TCT MOBILE N 103 1XAB 02 3JS Hecho en China FCC ID:RAD118 222A-2AALMX1 01200300XXXXXXX</p> 

Figure 1.1 Commercial Label

1.2.2 UNIT BOX MARKING (CU STICKER)**Label Dimension: 80mm x 38mm****Blank Label Reference: 3DS 04792 AAAA****Dimensions of information:****Code 13: Height x Length = 13mm x 26mm****Code 128: height = 6mm****CU Label Format (Sample):**

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GSM Version : CU label format for Outside China version		Zone	Content
	1	ALCATEL mobile phones signature(Picture)	
	2	Product Name: OT-222	
	3	Product Color A: Titanium grey B: Ocean blue	
	5	CU Reference (Text+1D Code)	
	6	IMEI Number (Text+1D Code)	
	7	5 V Logo	
	8	MADE IN (Refer to Make In file)	
	9	EAN Code (Text+1D Code)	
	14	GSM 900/1800MHz (Text+1D Code)	
	16	WEEE marking	
	17	Operator logo	
	18	TEXT: information (Refer to Make In file)	

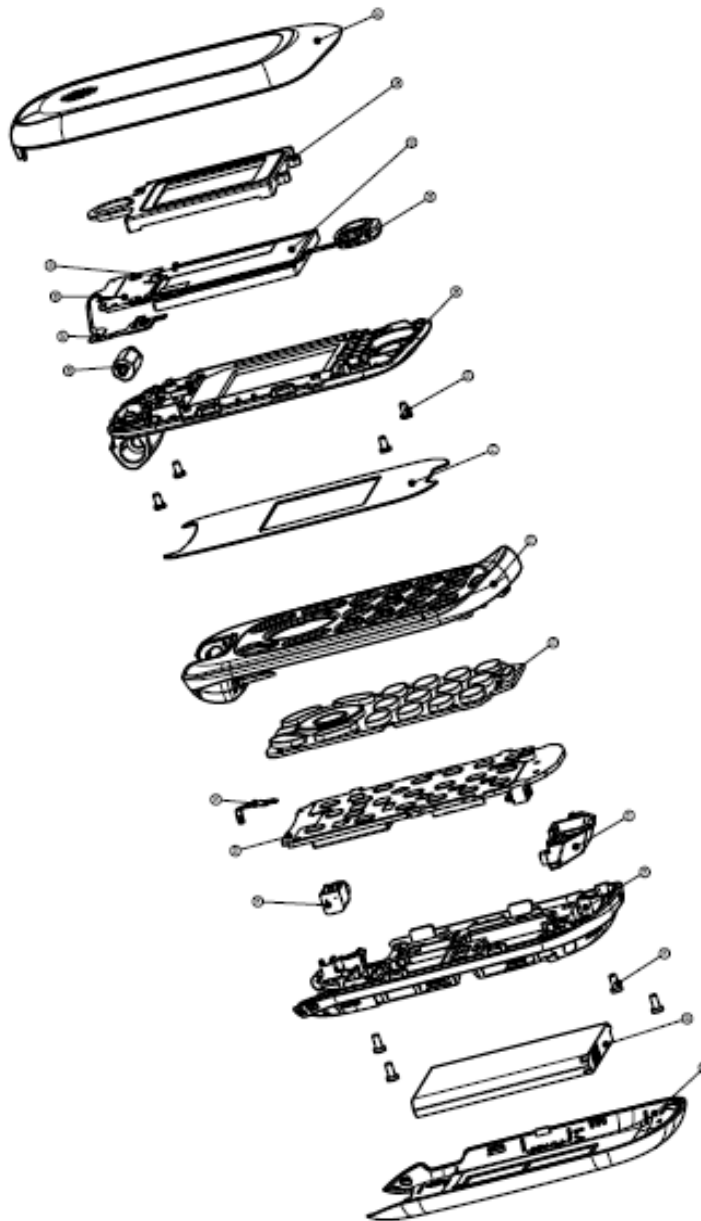
PCS version : CU label format for Latam version		Zone	Content
	1	ALCATEL mobile phones signature (Picture)	
	2	Product Name: OT-222A	
	3	Product Color A: Titanium grey B: Ocean blue	
	5	CU Reference (Text+1D Code)	
	6	IMEI Number (Text+1D Code)	
	7	5 V Logo	
	8	MADE IN info (Refer to Made In file)	
	9	EAN Code (Text+1D Code)	
	14	GSM 850/1900MHz (Text+1D Code)	
	15	FCC ID : RAD118	
	16	Operator logo (Refer to Made In file)	
	17	Electrical characteristics or None	
	18	TEXT: information (Refer to Made In file)	

Figure 1.2 CU Label

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1.3 EXPLODED VIEW



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Item	Description	Part Number	Type	QTY
01	Furnished Back Casing	BCE20W0**0C0	Assembly	1
02	LCD protect rubber	BNG20W0002C0	Part	1
03	Lcd module	AUA145T201C1	Part	1
04	SPEAKER & RECEIVER	AWA1115L02C1	Part	1
05	Antenna copper film	BMF20W0003C0	Part	1
06	FUR FLIP PCB	SBC20W00000C	Assembly	1
07	FUR MAIN FPC U10C	SBF20W00002C	Assembly	1
08	Hinge	BHA3010002C0	Part	1
09	Fur Front casing Dark grey	BCG20W0C00CX	Assembly	1
10	Back casing screw M1.6*3	T2000064AAAA	Part	4
11	Front sticker	BDA20W0A10C0	Part	1
12	Fur keypad casing Dark grey	BCA20W0C00C0	Assembly	1
13	Main keypad	BFA20W0****	Part	1
14	Spring keypad casing	BMF20W0001C0	Part	1
15	FUR MAIN PCB	SBA20W0E000C	Assembly	1
16	Vibrator	T2003443AAAA	Part	1
17	Furnished Antenna	BBC20W0**0C1	Assembly	1
18	Furnished Frame	BCC20W0**0C0	Assembly	1
19	Frame screw M1.6*3.5	T2000534AAAA	Part	4
20	Battery Pack	CAB20G0000C1	Part	1
21	Battery Cover	BCK20W0**0C0	Part	1

Figure 1.3 Exploded View

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1.4 RADIO SPECIFICATION&LANGUAGE SEPECIFICATION

1.4.1 U10C RADIO SPECIFICATION

	EGSM channel	DCS channel
Transmission frequency band	880-915 MHz	1710-1785 MHz
Reception frequency band	925-960 MHz	1805-1880 MHz
Duplex spacing	45 MHz	95 MHz
Channels spacing	200 kHz	200 Khz
Number of channels	174	374
Type of operation	Temporal multiplexage AMRT. Each radio channel is time shared by Frame of 8 period of time.	
Time slot duration	577 μ s	577 μ s
Type of modulation	GMSK	GMSK
Reception specifications		
Sensibility treshold	-102 dBm sur 50 \square	-102 dBm sur 50 \square
Maximum useful signal power applicable to the antenna	-10 dBm	- 10 dBm
Transmission specifications		
Class	IV GSM	I DCS
Maximum power on 50 ohms	2 W (+ 33 dBm \pm 2)	1W (+ 30 dBm \pm 2)
Number of power levels	15	16
Pitch between two levels	2 dB	2 dB

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	PCS channel	850MHz channel
Transmission frequency band	1850-1910 MHz	825-849 MHz
Reception frequency band	1930-1990 MHz	870-894 MHz
Duplex spacing	80 MHz	45 MHz
Channels spacing	200 kHz	200 Khz
Number of channels	299	124
Type of operation	Temporal multiplexage AMRT. Each radio channel is time shared by Frame of 8 period of time.	
Time slot duration	577 μ s	577 μ s
Type of modulation	GMSK	GMSK
Reception specifications		
Sensibility treshold	-102 dBm sur 50 \square	-102 dBm sur 50 \square
Maximum useful signal power applicable to the antenna	-10 dBm	- 10 dBm
Transmission specifications		
Class	I PCS	IV GSM
Maximum power on 50 ohms	1 W (+ 30 dBm \pm 2)	1W (+ 30 dBm \pm 2)
Number of power levels	16	16
Pitch between two levels	2 dB	2 dB

1.4.2 U10C GUAGE SPECIFICATION

U10C cellphones are customized in the language (if available) of the country of destination.

It comprises one resident language (English) plus, possibly, one of the following groups of extra languages (from 1 to 4 languages) depending on the country of destination.

Group	Content	Comment
G00	English	Present in all Group

No	Group	Language Content	Associated Country	Phase	Remark
1	G01	German, Italian, French, Spanish	UK, France, Italy, New Zealand, FIJI, Morocco	P2	
2	G02	German, Portuguese, Spanish, French	Portugal, African countries *	P2	
3	G03	Dutch, German, Turkish, French	Germany, Austria, Turkey, Netherland, Belgium, South Africa, Austria, Switzerland		Germany (T-Mobile, Teling, TPH and Vodafone..), Netherland
4	G04	Galician, Spanish, Basque, Catalan	Spain	P2	
5	G05	Romanian, Italian, German, Hungarian	Romania, Hungary		Hungary
6	G06	Albanian, Bulgarian, Serbian, Turkish	Bulgaria		
7	G07	Spanish, Brazilian Portuguese, Italian, French	Brazil, Mexico, Argentina, Columbia, Chile, Peru, Panama, Nicaragua, Comcel, Guatemala, El Salvador, Honduras, Rep.Dominicana Venezuela, Ecuador	P1	
8	G08	German, Polish, Czech, Slovakian	Poland, Slovakia		

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9	G09	Danish, Norwegian, Swedish	Denmark, Norway, Sweden		
10	G0B	German, Croatian, Slovenian, Latin Serbian	Croatia, Slovenia, Serbia, Montenegro		Croatia
11	G0J	American English, Spanish, Italian, French	USA, Canada		
12	G11	Simplified Chinese, Traditional Chinese	China, Hong Kong, U.A.E, Al Futtain		
13	G12	Arabic, French, Turkish	North Africa *, Middle East *, Afghanistan, Lybia	P2	
14	G13	German, Russian, Ukrainian, English, French	Russia, Ukraine, Kazakhstan, Azerbaijan, Byelorussia, Belarus	P2	
15	G15	Malaysian, Bahasa Indonesian, Simplified Chinese	Malaysia, Indonesia		
16	G16	Estonian, Latvian, Lithuanian, Russian	Estonia, Latvia, Lithuania		
17	G17	Thai, Simplified Chinese	Thailand		
18	G18	Macedonian, Albanian, Serbian; Bulgarian	Macedonia		
19	G19	Simplified Chinese, Vietnamese	Vietnam		
20	G20	French, Romanian, Polish, Simplified Chinese	Ireland Vodafone		
21	G21	Russian, Albanian, Greek, Bulgarian	Albania, Greece, Cyprus		Greece
22	G22	Polish, Russian, Romanian	Poland (Avon)		
23	G23	French, Italian, Portuguese, Spanish	African countries (Orange Export) , Orange Senegal and Uganda		Orange
24	G24	Hungarian , Slovakian, Czech , Romanian , English	Czech/Slovakia/Hungary specific customers		Czech
25	G25	Hindi, English	India		
26	G26	Hebrew, Arabic, Russian,	Israel		
27	G27	Romanian, Russian, Italian, French	Moldavia		
28	G28	Slovenian, Croatian, Albanian and German	Slovenia, Croatia, Albania and Kosovo		Slovenia, Albania

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29	G29	Traditional Chinese with Bopomofo and Stroke input methods	Taiwan		
30	G30	Farsi, French, Turkish	Iran		
31	G31	FR/Malagasy/Spanish/Portuguese	Madagascar		Orange Teolma
32	G32	Polish, Czech, German and Russian	Poland, Czech Republic		Poland
33	G33	Dutch, German, Polish, French	Netherlands ,Germany		Netherland (Only Rabo mobile NL)
34	G34	Polish, German, French, Russia	Poland		
35	G35	Malagasy, French, German and Italian	Madagascar		Telma
36	G36	English, French, Arabic ,German	Uganda and other Easter African countries		Zain
37	G37	English, Arabic, French, German and Spanish	Qatar		
38	G38	Portuguese, Indonesian, English, Spanish, Italian	East Timor		

Remarks:

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1.5 ACCESSORIES

1.5.1 BATTERY



Figure 1.4 Battery Presentation

The battery has the following features:

Battery model	Technology	Capacity
Battery Li	Lithium	650mAh

Table 1.1 Battery Features

Table 1.2 shows the usable time of battery (rated range) for OT-222 cellphones in different modes. These typical values are expressed in normal temperature conditions with batteries initially charged and under good ratio coverage.

The usable time of battery depends on the network characteristics, the ambient temperature and particularly on movements that cause cell changes.

Power pack	U10C	
Mode	Standby (paging 5)	Talking(with Pmin*+ 50%DTX**)
Time	400 Hours	8 Hours

* Pmin: minimum transmission power

** DTX: no transmission during period of silence

Table 1.2 Usable Time Of Battery (Rate Range)

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For a normally discharge battery (which has not been stored), the charge/discharge time are those indicated in table 1.3.

Mode	Typical Charge time
Power pack Lithium	Less than 3 hours

Table 1.3 Typical Charge Time

Precautions when using and storing batteries:

If your battery is brand new, recharge it before use; the icon will then appear after a short while.

If the battery is deeply discharged, the battery charge indicator can take several minutes to appear and accompanied by a slight sound.

1.5.2 CHARGER

The power supply is a current generator. It includes an electrical part: AC to DC conversion base on a switch regulation, which must be connected to an indoor plug.

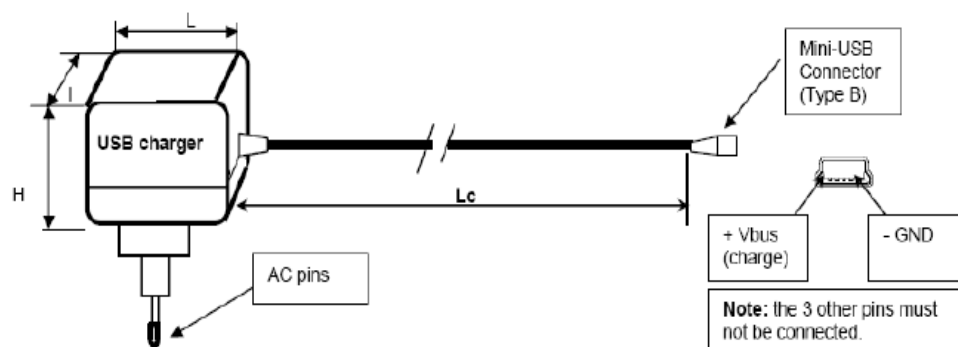


Figure 1.5 Charger Structure Chart

Mechanical dimensions:

$$L \times I \times H = 63.4\text{mm} \times 38.5\text{mm} \times 24\text{mm}$$

$$L_c = 1.5\text{m} \pm 0.1\text{m}$$

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Maximun Weight (total): 54g



Figure 1.6 Charger Presentation

1.5.3 HEADSET

Here is a memo headset shipped out:



Figure 1.7 Headset Presentation

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CHAPTER 2

MAINTENANCE GUIDE

2.5.1 MAINTENANCE POLICY

This chapter describes the maintenance of the U10C cell phones authorized at L1 repair centers. The maintenance operations can only be performed in approved repair centers.

2.2 GENERAL

Main L1 maintenance operations are as following:

Warranty inspections:

- Data code or invoice check
- Humidity sticker check
- Anti-demolition sticker check

Faults confirmation:

- Reproduce the faults as end user describes, to avoid any NFF or fault caused by end user mis-operation.

Swap the handset:

- Standard replacements of cellphones and take back the faulty handsets.

Accessories replacing:

- Check the battery and charger
- Check the headset
- Check the other accessories which are in warranty
- Exchange defective accessories which are in warranty

For hands-free vehicle kit:

- Functional check

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Mechanical and electrical installation checks
 Replacements of defective accessories in warranty

Final test:

Switch on the cellphone
 Insert a SIM card to test in/out going call
 Test the vibration function
 Cosmetic check

Send the faulty handsets to upper level RC with a description form to describe the faults.

If you input the following codes to cellphones, you can:

Code	Description
*#06#	Display the software version and IMEI number
*#73738#	Reset all user parameter and data
11223344	Unlock the phone (Super Code)
###232#	Access call duration directly (DAP Code)
*#837#	Check current software version
*#2886#	Enter Auto Test mode

WARNING:

- All user personal data will be lost after entering the code ***#73738#**, except information in SIM card. This includes: pictures, sounds, downloaded applications and games, product directory data, WAP bookmark.... added by the user. This may also delete some of the original pictures/sounds/games provided within the phone. You can save and restore the data by using the Cloning Software tools.
- After the sequence has been entered, phone auto switch on will take about a few sec, never manipulate the phone during this period of time.

2.3 CELLPHONE MAINTENANCE

2.3.1 REQUIRED TOOLS

Cellphone testing required mandatory tools:

A charged battery
 A functional SIM card

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We recommend the following tools:

- A PC with OS (Windows 2000/NT/XP)
- A multimeter for battery test
- A galvanometry meter for charger measurement
- A suit of screw driver

2.3.2 HUMIDITY STICKER CHECK

U10C cellphones are fitted with a sticker detecting liquid (on the frame). The sticker contains a detective colored bar which will become obscure once under humid condition, as the picture on the right showed:



Figure 2.1 Humidity Sticker

If a cellphone is sent to the repair center with an obscure bar or the bar is missing, that means that phone is out of guarantee.

2.3.3 CELLPHONE MAINTENANCE PROCEDURE

- Check that the SIM card is set correctly
- Insert end-user's battery
- Press the switch on button until the website message appears
- If the cellphone can not be power on, visually check the condition of the battery connector and replace the battery if necessary (see paragraph 2.4 for battery test)
- If the cellphone asks to insert the SIM card, visually check the card and card connector, try another SIM card to make sure which part fail
- Enter the phone code if necessary
- If power on OK, test the keypad, and each function under each menu

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- Make a call
- Receive a call
- If the phone is considered as faulty, upgrade the software (Do not forget to save customer information first, see paragraph 2.6)

2.3.4 REPLACING CELLPHONE PARTS

2.3.4.1 PRELIMINARY

Before any sub-assembly removal, the back cover, the battery and the SIM card must be removed. The following diagrams show the different stages to realize these operations:



Figure 2.2 Removing the battery cover and battery

2.3.4.2 PRECAUTIONS

The heart of the cellphone, containing all the digital circuit (microprocessor, ASIC, memories, display, keypad, etc) and the high-frequency transceiver

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circuit, is protected by the top and bottom shells.

However, certain areas sensitive to electrostatic discharges are completely or partially visible (keypad keys, SIM driver, etc) and in order to prevent any risk of damage during removal/installation of the shell, the operator's wrist should be grounded when working on the heart of the phone.

This operation is illustrated in the following figure. The operator wears a conducting bracelet connected to an anti-static pad placed on the work surface, itself connected to the workbench metal structure, the whole being earthed.



Figure 2.3 Protection Against Electrostatic Discharges

2.4 BATTERY TEST

2.4.1 CHARGING PROCESS

Table 2.1 describes the various events related to connection of a standard charger connected to a cellphone.

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	OT-222 (A)	
Cellphone status before charger connection	ON	OFF
During charging	Display lights up and following battery icon displayed:	
		
After charging (charger connected)	Sequential icon flashing:	
		

Table 2.1 Battery Charge Status On The Cellphone

The charger or the cell phone's charge function is defective (connectors or electronics) if the display does not light or the icons do not flash. In this case, try to charge the battery on the cellphone with another charger. If the charge process runs correctly, replace the charger. If it does not work, try to charge with another battery. If the charge process runs correctly, replace the battery. Check the charge connector. If it is damaged, replace the cellphone.

For a normally discharged battery (with not a long time of stocking), charging time is indicated on table 2.2.

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Battery \ Mode	Typical Charge time
Lithium	Less than 3 hours

Table 2.2 Battery Typical Charge Time

2.5 CHARGER TEST

When the standard charger is connected to the cellphone, check correct running of the charge sequences on its display (see paragraph 2.4.1). use the galvanometry meter to measure the current of the charger.



Figure 2.4 Galvamometry Meter

Connect the power supply, the charger to the meter (on the side of “IN”), and connect the cables from “OUT” side to the handset, you will see how much the current is on the screen.

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Figure 2.5 Connection Diagram

The measurements at the charger output should be: 450mA ~ 550mA.

2.6 USER INFORMATION TRANSFER

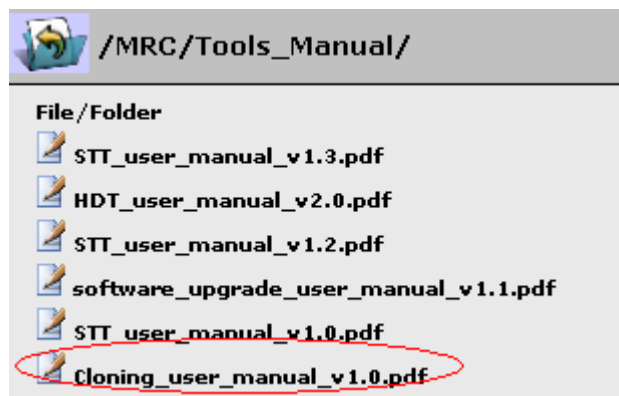
For OT-222, you can use the cloning tool to transfer user information to PC with downloading cable.

- (1). Find cloning tool on MLDC as below location:



- (2). Install the cloning tool on your computer.

- (3). The user manual on MLDC will show you how to use the tool:



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2.7 SOFTWARE UPGRADE

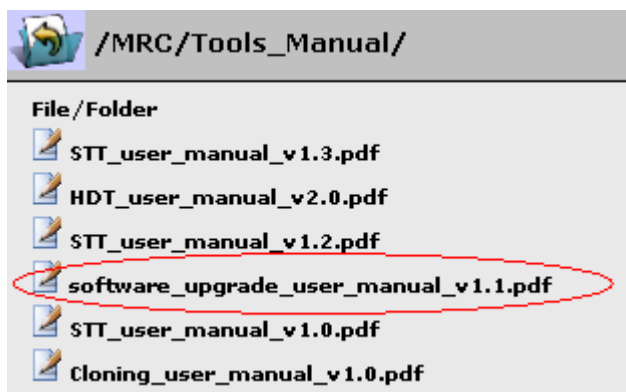
In level 1 repair center, we can do software upgrade downloading for the mobile which need software updated. This downloading method is online and with you account.

(1). Find the Software Upgrade tool on MLDC as below location:



(2). Install the tool on your computer.

(3). The user manual on MLDC will guide you how to use the tool:



For multi-download, we have verified 4 at one time. And the capacity is about 20 handsets/hour/PC (depend on the internet and PC configuration on your side).

Note: Please close other application programs to save enough memory for the upgrade tool when you use multi-download. If you meet some error messages, click OK and reset the battery, then downloading restart.

End of the document !

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